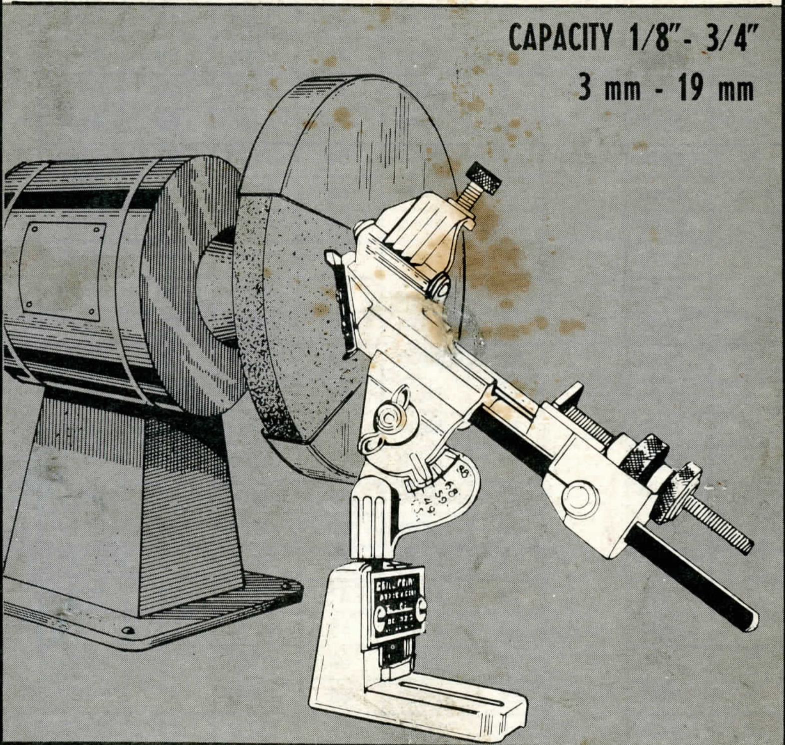
# DRILL GRINDING ATTACHMENT

**CAPACITY 1/8"- 3/4"**

**3 mm - 19 mm**



## PERSONAL SAFETY

*The operator of this Drill Grinding Attachment should abide by the OSHA Rules and Regulations, especially Subsection 1910. 133, which states in part, "Protective Eye and Face equipment shall be required where there is a reasonable probability of injury that can be prevented by such equipment." It is also strongly recommended that Subsections 1910. 215 (Abrasive Wheels and Grinder Guarding) and 1910. 314 (Equipment Grounding) be adhered to.*

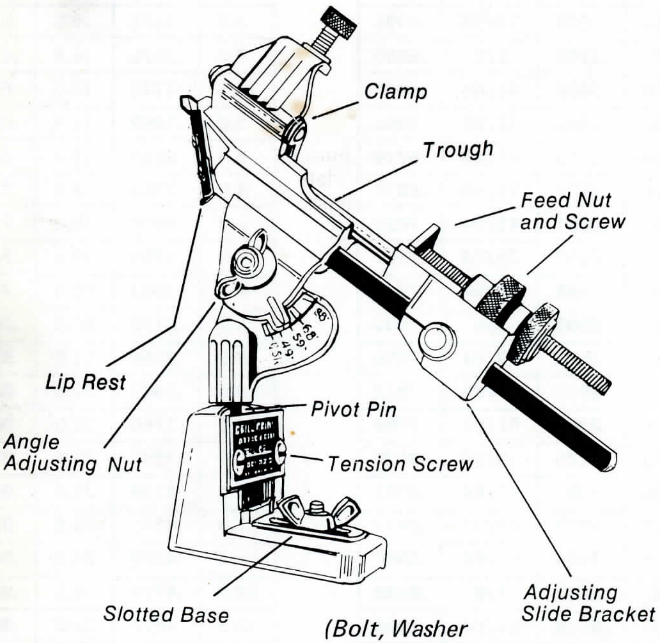
MADE IN U.S.A.

Form# 825-55

# MOUNTING THE ATTACHMENT

The Grinder and the Attachment should be secured firmly to a sturdy bench. The Attachment is mounted at right angles to the Grinding Wheel. The nose of the trough should be near the center of the Grinding Wheel. Fasten Attachment to bench using a Bolt, Washer and Wing Nut. The Bolt should be located approximately 2¼ " from the front of the Grinding Wheel. The Attachment Base is slotted to provide adjustment. (Fig. 1)

Fig. 1



*(Bolt, Washer and Wing Nut not included)*

**NOTE:** For certain grinders it may be necessary to block up the grinder or the Attachment. Shops with magnetic chucks on surface grinders can attach a steel plate to base of Attachment for use with "In Feeds".

# OPERATING INSTRUCTIONS

1. Remove Trough from Base by removing Angle Adjusting Nut.

2. Place drill in Trough. Adjust Lip Rest until it extends slightly behind the cutting edge of the Drill (Fig. 2). Extend drill according to overhang chart. Adjust Rear Bracket to hold drill in this position, tighten Clamp, and secure Lip Rest.

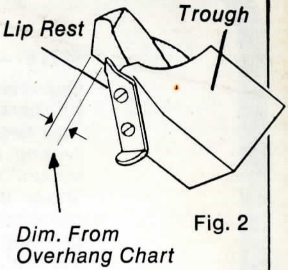


Fig. 2

## DRILL OVERHANG

| ***Point Angle*** | ***Overhang*** | ***Usage*** |
|---|---|---|
| 88° | 1/16 IN. | Thin sheets; very hard materials |
| 68° | ½ of Drill Dia. | High volume production |
| 59° | ½ of Drill Dia. | General purpose drilling |
| 49° | 1 of Drill Dia. | Soft Materials *(I.E. Copper, Wood, Plastic)* |
| 41° | As Required | Countersinks; wood, hard rubber, fibre, etc. |

3. Replace Trough, setting angle indicator to desired point angle.

4. Using Slotted Base, move attachment toward flat surface of Grinding Wheel until point of drill just touches wheel. Secure Base.

5. In grinding, use a light touch to swing Attachment back and forth on Pivot Pin. If Pivot Pin is tight, loosen one Tension Screw on Nameplate. Avoid Grinding too much in one sweep as this will cause the drill to burn.

6. Advance drill gradually through use of Feed Screw until entire surface is ground.

7. Turn off Grinding Wheel. *Do Not* remove drill or change adjustments.

8. To grind second lip, pivot Attachment away from wheel. Loosen Clamp only. Rotate drill until the opposite cutting edge rests firmly against the Lip Rest as before. Re-tighten Clamp.

9. Do not change any adjustments when grinding second lip. Do not grind in one sweep. Use a series of slow, short sweeps until the drill passes through.

# DRILL SIZE EQU

## FRACTIONAL DRILLS

| Fractional Drills | Decimal Inches | Fractional Drills | Decimal Inches |
|---|---|---|---|
| 1/64 | .0156 | 33/64 | .5156 |
| 1/32 | .0312 | 17/32 | .5312 |
| 3/64 | .0469 | 35/64 | .5469 |
| **1/16** | **.0625** | **9/16** | **.5625** |
| 5/64 | .0781 | 37/64 | .5781 |
| 3/32 | .0937 | 19/32 | .5937 |
| 7/64 | .1094 | 39/64 | .6094 |
| **1/8** | **.1250** | **5/8** | **.6250** |
| 9/64 | .1406 | 41/64 | .6406 |
| 5/32 | .1562 | 21/32 | .6562 |
| 11/64 | .1719 | 43/64 | .6719 |
| **3/16** | **.1875** | **11/16** | **.6875** |
| 13/64 | .2031 | 45/64 | .7031 |
| 7/32 | .2187 | 23/32 | .7187 |
| 15/64 | .2344 | 47/64 | .7344 |
| **1/4** | **.2500** | **3/4** | **.7500** |
| 17/64 | .2656 | 49/64 | .7656 |
| 9/32 | .2812 | 25/32 | .7812 |
| 19/64 | .2969 | 51/64 | .7969 |
| **5/16** | **.3125** | **13/16** | **.8125** |
| 21/64 | .3281 | 53/64 | .8281 |
| 11/32 | .3437 | 27/32 | .8437 |
| 23/64 | .3594 | 55/64 | .8594 |
| **3/8** | **.3750** | **7/8** | **.8750** |
| 25/64 | .3906 | 57/64 | .8906 |
| 13/32 | .4062 | 29/32 | .9062 |
| 27/64 | .4219 | 59/64 | .9219 |
| **7/16** | **.4375** | **15/16** | **.9375** |
| 29/64 | .4531 | 61/64 | .9531 |
| 15/32 | .4687 | 31/32 | .9687 |
| 31/64 | .4844 | 63/64 | .9844 |
| **1/2** | **.5000** | **1** | **1.0000** |

## METRIC DRILLS

| Metric Drills (M/M) | Decimal Inches | Metric Drills (M/M) | Decimal Inches |
|---|---|---|---|
| .5 | .0197 | 13.0 | .5118 |
| 1.0 | .0394 | 13.5 | .5315 |
| 1.5 | .0591 | 14.0 | .5512 |
| 2.0 | .0787 | 14.5 | .5709 |
| 2.5 | .0984 | 15.0 | .5906 |
| 3.0 | .1181 | 15.5 | .6102 |
| 3.5 | .1378 | 16.0 | .6299 |
| 4.0 | .1575 | 16.5 | .6496 |
| 4.5 | .1772 | 17.0 | .6693 |
| 5.0 | .1969 | 17.5 | .6890 |
| 5.5 | .2165 | 18.0 | .7087 |
| 6.0 | .2362 | 18.5 | .7283 |
| 6.5 | .2559 | 19.0 | .7480 |
| 7.0 | .2756 | 19.5 | .7677 |
| 7.5 | .2953 | 20.0 | .7874 |
| 8.0 | .3150 | 20.5 | .8071 |
| 8.5 | .3346 | 21.0 | .8268 |
| 9.0 | .3543 | 21.5 | .8465 |
| 9.5 | .3740 | 22.0 | .8661 |
| 10.0 | .3937 | 22.5 | .8858 |
| 10.5 | .4134 | 23.0 | .9055 |
| 11.0 | .4331 | 23.5 | .9252 |
| 11.5 | .4528 | 24.0 | .9449 |
| 12.0 | .4724 | 24.5 | .9646 |
| 12.5 | .4921 | 25.0 | .9843 |
|  |  | 25.4 | 1.0000 |

TO CONVERT INCHES TO MILLIMETERS
MULTIPLY BY 25.4

TO CONVERT MILLIMETERS TO INCHES
MULTIPLY BY .03937

# IVALENCY DATA

## LETTER DRILLS

| Letter Drill | Decimal Inches |
|---|---|
| A | .2340 |
| B | .2380 |
| C | .2420 |
| D | .2460 |
| E | .2500 |
| F | .2570 |
| G | .2610 |
| H | .2660 |
| I | .2720 |
| J | .2770 |
| K | .2810 |
| L | .2900 |
| M | .2950 |
| N | .3020 |
| O | .3160 |
| P | .3230 |
| Q | .3320 |
| R | .3390 |
| S | .3480 |
| T | .3580 |
| U | .3680 |
| V | .3770 |
| W | .3860 |
| X | .3970 |
| Y | .4040 |
| Z | .4130 |

## NUMBER DRILLS

| Number Drill | Decimal Inches | Number Drill | Decimal Inches | Number Drill | Decimal Inches |
|---|---|---|---|---|---|
| 1 | .2280 | 28 | .1405 | **55** | **.0520** |
| 2 | .2210 | 29 | .1360 | 56 | .0465 |
| 3 | .2130 | **30** | **.1285** | 57 | .0430 |
| 4 | .2090 | 31 | .1200 | 58 | .0420 |
| **5** | **.2055** | 32 | .1160 | 59 | .0410 |
| 6 | .2040 | 33 | .1130 | **60** | **.0400** |
| 7 | .2010 | 34 | .1110 | 61 | .0390 |
| 8 | .1990 | **35** | **.1100** | 62 | .0380 |
| 9 | .1960 | 36 | .1065 | 63 | .0370 |
| **10** | **.1935** | 37 | .1040 | 64 | .0360 |
| 11 | .1910 | 38 | .1015 | **65** | **.0350** |
| 12 | .1890 | 39 | .0995 | 66 | .0330 |
| 13 | .1850 | **40** | **.0980** | 67 | .0320 |
| 14 | .1820 | 41 | .0960 | 68 | .0310 |
| **15** | **.1800** | 42 | .0935 | 69 | .0292 |
| 16 | .1770 | 43 | .0890 | **70** | **.0280** |
| 17 | .1730 | 44 | .0860 | 71 | .0260 |
| 18 | .1695 | **45** | **.0820** | 72 | .0250 |
| 19 | .1660 | 46 | .0810 | 73 | .0240 |
| **20** | **.1610** | 47 | .0785 | 74 | .0225 |
| 21 | .1590 | 48 | .0760 | **75** | **.0210** |
| 22 | .1570 | 49 | .0730 | 76 | .0200 |
| 23 | .1540 | **50** | **.0700** | 77 | .0180 |
| 24 | .1520 | 51 | .0670 | 78 | .0160 |
| **25** | **.1495** | 52 | .0635 | 79 | .0145 |
| 26 | .1470 | 53 | .0595 | **80** | **.0135** |
| 27 | .1440 | 54 | .0550 | 81 | .0130 |

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## NOTE — HEEL CLEARANCE

Occasionally, an improperly sharpened drill will produce a heel behind the cutting lips (Fig. 3). This heel will cause the drill to drag when cutting. In order to avoid this drag, the heel should be removed by hand grinding in the area shown in Fig. 4. Care must be taken to avoid grinding too close to the cutting edge when grinding the heel clearance as this will dull the drill.

## NOTE — PROFICIENCY

As with any fine tool, more proficiency will be gained with experience. We suggest that the user practice sharpening a drill, carefully noting the effect of each operating step as it occurs. This will provide the user with the knowledge necessary to obtain a properly sharpened drill.

## NOTE — INDUSTRIAL USERS

In order to bring you this Drill Grinding Attachment at a modest price, it has been necessary to make some geometric compromises in it's design. The various cutting angles will suffice for the general run of maintenance and hobbyists work. However, for super-precision, high volume production work, we recommend the use of industrial sharpening equipment designed to cope with the varied problems encountered in that type of application.

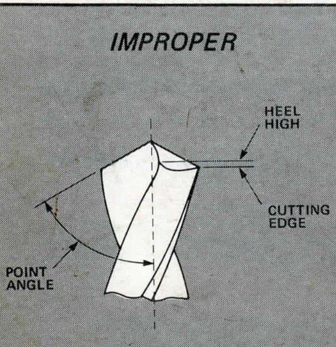

FIG. 3

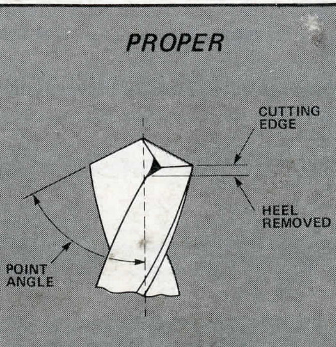

FIG. 4